EXHIBIT 4
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SB 150

Attached, you will find our suggestion for a public law that balances the needs of industry and private citizens with the needs of a free society with respect to the emerging technology of Unmanned Aerial Vehicles (UAVs), also known as drones. We have spent quite some time considering both how UAVs are used today by governments and corporations, and how their expanding capabilities will be used in the future; hence, we offer this document to help to explain to you the current and upcoming technology in this area, and how we hope that this law will protect the fundamental freedoms that each person in the United States enjoys without onerously burdening the private sector that employs so many Montanans.

Please feel free to contact The Rutherford Institute with any questions you may have; we are happy to assist you with your deliberations in any way you may find useful.

This document links to several videos demonstrating current and developing UAV technology. To save you time, The Rutherford Institute has compiled one video showing several different technologies in the order presented in this document; we invite you to examine it at http://tinyurl.com/dronevideo .

I. Current UAV Technology

The abilities of current military UAVs are relatively well-documented, if not generally directly experienced by the American public. Modern military UAVs view and record every action taken by every person in a full city simultaneously [1], whether or not they are targets of interest at the time the recordings are taken; analysts can then use "instant replay" technology (designed by the same people responsible for reality television camera operations) to access recordings from any time in the past, of and from any location in the field. UAVs that store video in these same systems range from tiny, hand-thrown drones with wingspans of just a few feet that can be carried in a backpack, [2] to the massive Avenger that stores its bombs and missiles inside its 16,000 pound hull. [3]

Of course, these are military drones, flying combat missions to protect our troops. Let us instead look at the UAVs flying over the United States. The Department of Homeland Security flies Predator drones (capable of carrying the same "Gorgon Stare" whole-city camera system as in [1]) from Corpus Christi, Texas [4], and wants an additional 22 as soon as it can. [5] For reference, only 61 of the current Predator model, the MQ-1C "Grey Eagle," have been produced for the whole world since 2004 [6], which means that the Department of Homeland Security wants to have the capacity to fight almost half as many full wars as the Department of Defense does, UAV-wise. There is no difference in the technology being deployed between the military and DHS versions; only the currently-stated intent differs in any way.

This military technology is not confined to the Border Patrol, either; the Electronic Frontier Foundation compiled a list of the more than 700 authorizations to non-military entities (including universities, local police forces, and even sheriffs of rural counties) granted since 2004 [7], and so now police forces can watch—and indeed, will be watching—every activity taking place over the area of an entire city, day or night, whether or not any wrongdoing takes place, and storing that data for future use. This technology is being employed so broadly that, as the EFF noted, Otter Tail, Minnesota is planning to fly the same planes that were designed for combat zones. Indeed, so many people are now needed to fly these UAVs that American aviation schools are now ranking UAV pilot schools, and encouraging young people to "get a huge advantage" by studying this expanding field now. [8]

In addition to these civilian uses of drones, the Department of Defense operates 64 flight bases for UAVs in the United States. [9] Since these planes do, of course, have to traverse American airspace

while flying to combat zones, their sensors will see the same range of legal human activity as any other drone in American airspace--and despite the "posse comitatus" rules prohibiting use of the military against American civilians without Congressional approval, the Air Force recently sent out a mandatory instruction instructing UAV teams to keep that footage for "up to" 90 days while it is examined for evidence of wrongdoing. [10] Even assuming that it is not kept longer, it is an unprecedented step in the history of the use of military force against American citizens to allow them to keep a continuous log of all civilian activities for 90 days; since police can keep such footage permanently, however, one can imagine a "Truman Show"-style montage of every moment of one's life, captured for one's convenience from overhead.

II. Emerging Technology

UAVs are, at the moment, restricted by their size from some activities; it is hard to imagine a plane with a 30-foot wingspan peering into a home window. Science has, however, come to the UAVs' rescue, and it has done so at an extremely attractive price point. For less than $1000, any person can own a powerful multicopter—a helicopter-type device with many separate propellers that allow it to hover in place for minutes or hours while capturing video, audio, and even thermal images. These devices can shoot incredible footage, and can be assembled using just basic tools from kits; some examples of their video quality and agility are demonstrated by the 2009 Mikrokopter project and the 2012 QuadShot project. [11, 12] Even toy manufacturers have gotten into the act; the Parrot AR.Drone 2.0, a $299 device sold on Amazon.com, [13] captures HD video in fantastic quality while streaming live to an iPhone, iPad, or Android device. [14] Even the previous version, which streamed only standard-definition video, is impressive enough; we took one outside at The Rutherford Institute to watch it in action, and were amazed by the capabilities of a device—controllable by children!—that contains technology reserved just a few years ago for the military. [15]

Meanwhile, science rushes onward, successfully mounting remote-control electronics on biological flying insects [16] and creating fully-artificial robots that look like natural hummingbirds in both size and appearance. [17] High-school students can now take parts from cheap robotics kits and use them to control the muscles on (real) cockroaches to steer them around a room. [18] Harvard University has even developed a bee-styled UAV that assembles like a pop-up book and has a body smaller than a penny. [19] With these new technologies, it will soon be essentially impossible to tell the difference between a normal insect or animal and police surveillance without detailed inspection.

III. The Legal Question

Clearly, UAVs can collect a large amount of data on law-abiding citizens without their knowledge or consent; in general, in the United States, we use warrants to restrict the police use of such surveillance technologies to situations where it can be shown that there is probable cause to believe that a crime has occurred. Why will this not work in this case?

Unfortunately, UAVs are different from normal surveillance technology, precisely due to their flight characteristics. As noted above, even the Air Force cannot control what their drones see en-route to an assigned mission; the same cameras that record a citizen's every waking action also keep the plane from, for instance, flying into a flock of geese. Requiring a warrant before recording citizens is simply unworkable; police forces will not be able to comply with the law.

Even if the law did require a warrant, this is simply a minor procedural hurdle; regardless of merit,

judges essentially never deny warrant requests, and magistrate judges charged with consideration of warrants often consider themselves to be an "extension of law enforcement." [20] Worse, even when warrants are not issued, the Supreme Court has ruled that as long as the police act in "good faith" the lack of a warrant is irrelevant. [21] Since as noted, drones cannot avoid collecting this data, "good faith" will prove to be universal. Warrants do not, therefore, stand as any realistic safeguard against the abuse of UAVs.

There is an example, in American jurisprudence, of a technology so damaging to the rights of citizens that its use was banned outright in the courts: the polygraph, commonly known as the "lie detector." This device, based on pseudoscientific principles, was judged to be a violation of the Fourth and Fifth amendments and was excluded from the courts entirely-- even when its conclusions might be used only as an aid to judgement, rather than as a determining factor. We believe that the polygraph device provides a useful model for this situation.

IV. The Solution

The law you have attached to this document takes two important steps. First, it prohibits the use of UAV-collected data (whether the data comes from a camera, sensor, or other device) by the prosecution in all crimes in the state. Importantly, it does so regardless of what entity employed the UAV; if a private corporation uses UAVs to inspect their own equipment, such devices may accidentally collect private data on citizens, and are thus excluded. Secondly, it prohibits the use of UAVs containing anti-personnel devices by any agency in the state. Since even the military, with all their expertise, satellite data, and intelligence are unable to determine who in an area is a foe using UAVs, [22] we do not believe that we should ask the brave men and women of law enforcement to attempt to make such a weighty decision with even less information.

We believe that this law would help to protect the citizens of Montana, and serve as a model for the rest of the country for how to balance the needs of the citizens with the needs of private industry, who may have many great reasons to use improved technology to expand their business, and with the needs of law enforcement, who cannot in good conscience be asked to use lethal force against a nebulous (and undeterminable) group of citizens. Thank you for your time and consideration.

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[2]: "Raven RQ-11B Technical Specifications," *AeroVironment*, http://www.avinc.com/downloads/AV_RAVEN-DOM_V10109.pdf

[3]: Robert Johnson, "The Air Force Just Bought Its Biggest And Fastest Armed Drone Ever," *Business Insider* (December 31, 2011), http://articles.businessinsider.com/2011-12-31/news/30575726_1_mq-9-new-drone-uav

[4]: Alice Lipowicz, "DHS starts Predator UAV flights in Texas," *Federal Computer Week* (September 3, 2010), http://fcw.com/articles/2010/09/03/dhs-starts-predator-uav-flights-out-of-texas-airport-this-week.aspx

[5]: Stew Magnuson and Ashleigh Fugate, "DHS May Wait 14 Years To Complete Its UAV Fleet," *National Defense* (September 2010), http://www.nationaldefensemagazine.org/archive/2010/September/Pages/DHSMayWait14YearsToCompleteItsUAVFleet.aspx

[6]: Paul McLeary, "MQ-1C Undergoing Development, Deployment," *Defense News* (July 3, 2012), http://www.defensenews.com/article/20120703/C4ISR01/307030007/MQ-1C-Undergoing-Development-Deployment

[7]: Jennifer Lynch, "FAA Releases Lists of Drone Certificates—Many Questions Left Unanswered," *Electronic Frontier Foundation* (April 19, 2012), https://www.eff.org/deeplinks/2012/04/faa-releases-its-list-drone-certificates-leaves-many-questions-unanswered

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[11]: Video: "Mikrokopter with GoPro HD HERO attached," (December 29, 2009), https://www.youtube.com/watch?v=-3U-n8lRJtA
[12]: Video: "Quadshot – Episode 5," (September 16, 2011), http://youtu.be/P6NDt1PCIDg?hd=1&t=2m30s
[13]: Amazon.com: "Parrot AR.Drone 2.0," http://www.amazon.com/Parrot-AR-Drone-Quadricopter-Controlled-Android/dp/B007HZLLOK/
[14]: Video: "Video Quality Test - Parrot AR Drone 2.0 - MP4 v's MOV," (July 9, 2012), http://youtu.be/wpKRvHKW2U8?hd=1&t=34s
[15]: Video: "Rutherford – Outside Video," (August 1, 2012), https://www.youtube.com/watch?v=lCMjpsLVu7U
[16]: Video: "Remote-controlled cyborg beetle," (September 23, 2009), https://www.youtube.com/watch?v=PAeV96bTRiI
[17]: Video: "NANO Hummingbird Drone," (February 17, 2011), https://www.youtube.com/watch?v=7k_BzTu92Nc
[18]: Video: "First BiDirectional RoboRoach Prototype," (March 3, 2011), https://www.youtube.com/watch?v=04T5Zq6KPyY
[19]: Video: "Pop-up Fabrication of the Harvard Monolithic Bee (Mobee)," (November 17, 2011), http://youtu.be/VxSs1kGZQqc?hd=1&t=3m50s
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[21]: *United States v. Leon*, 468 U.S. 897 (1984).
[22]: Jo Becker and Scott Shane, "Secret 'Kill List' Proves a Test of Obama's Principles and Will," *The New York Times* (May 29, 2012), https://www.nytimes.com/2012/05/29/world/obamas-leadership-in-war-on-al-qaeda.html